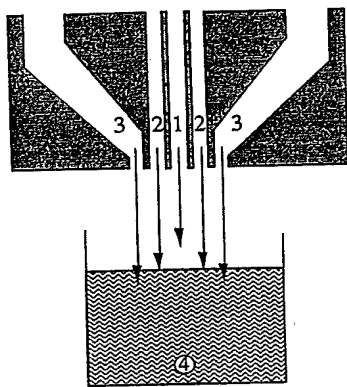


**REMARKS**

In the present Amendment, claim 1 has been amended to recite utilizing a spinneret to allow a controlled flow of a liquid mixture comprising a solvent and a non-solvent for said polymeric material, or a gas stream comprising a nonsolvent for the polymeric material, parallel to an exterior medium of the nascent fibre, thus adjusting the porosity and pore size of the outer wall of the nascent fibre. This amendment is supported by the disclosure, for example, page 11, lines 9-18 and 26-29. Particularly, the present specification describes at page 11, second full paragraph, that parallel flow is intended. Specifically, the claim recites a two-step phase inversion process, which according to the specification is synonym for the use of a triple layer spinneret as described in WO 93/12868. According to WO '868, such a spinneret involves multiple outlet openings concentrically arranged (see, e.g., figure and claim 1):



It is clear from the above figure that inevitably, parallel flow is achieved by using such a triple layer spinneret. Therefore, one skilled in the art would understand that the term "along," as used in the present application, means "parallel to."

New claim 37 has been added. Claim 37 corresponds to previous claim 9. Claims 3, 5, 13 and 24 have been amended to further improve their form. Claims 6 and 8 were previously canceled.

No new matter has been added. Applicants respectfully submit that entry of the amendments, after final, is proper, at least because they place the application either in condition for allowance or in better form for appeal. See M.P.E.P. § 714.12. Upon entry of the Amendment, claims 1-5, 7 and 9-37 will be all the claims pending in the application.

**I. Statement of Substance of Interview**

Applicants thank Examiners Altrev Sykes and Larry Tarazano for their participation in a telephonic Interview on August 5, 2010. The Interview Summary dated August 16, 2010 reflects the substance of the interview.

**II. Response to Rejection under 35 U.S.C. § 112, First Paragraph**

Claims 1-5, 7 and 9-36 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully submit that the present claims are in compliance with the § 112 requirements.

In the Amendment, claim 1, from which claims 2-5, 7 and 9-36 depend, has been amended to delete "a vapor or a gas" mixture. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

**III. Response to Rejections under 35 U.S.C. § 103(a)**

a. Claims 1-5, 7, 10-16, 18 and 26-36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,093,197 to Howard et al. in view of WO 93/12868. Applicants respectfully submit that the present claims are patentable over the cited references for at least the following reasons.

Howard et al. discloses a process for forming fibers or filaments comprising extrusion of a mixture of polyolefin, filler and plasticizer from a die, to form fibers or filaments, and extracting at least a portion of the extractable plasticizer *afterwards*, to provide the desired

porosity (Abstract; col. 1, lines 63-68). As explained at col. 3, lines 47-51 of Howard et al., the "extraction" serves to impart porosity to the fiber by at least partially removing the plasticizer material *after* fiber formation.

It is noted that Howard et al.'s process for forming a porous fiber involves two separate steps, i.e., an extrusion step and a subsequent extraction step. In essence, Howard et al.'s process is analogue to that of WO 98/34977 as described at page 2, lines 15-20 of the present specification.

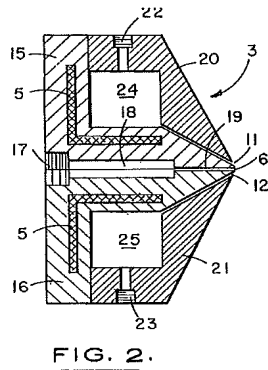
On the other hand, claim 1 now recites that adjusting the porosity and pore size of the outer wall of the nascent fibre in (i), prior to entering of said fiber into a coagulation bath (ii). That is, porosity control occurs prior to fiber formation ((ii)). For this reason, the presently claimed method is different from that described in Howard et al.

Furthermore, present claim 1 now recites utilizing a spinneret to allow a controlled flow of a liquid mixture comprising a solvent and a non-solvent for said polymeric material, or a gas stream comprising a nonsolvent for the polymeric material, *parallel to an exterior of the nascent fibre*, which reflects a parallel flow of the liquid or gas.

On the other hand, Howard et al. discloses at col. 5, lines 38-60, directing a hot gas stream against the extrudate at an angle designed to *attenuate* the filaments or fibers being extruded. Attenuation has, however, little to do with porosity. This is for instance exemplified by col. 5, lines 61-62 of Howard et al., where attenuation is accomplished by mechanical tension. Moreover, Howard et al. describes at col. 5, lines 65-66, that "*It is preferred to perform attenuation of filaments after the filaments have been subjected to the extraction step.*"

Applicants submit that an embodiment involving directing a hot gas stream *at an angle* as described in Howard et al. does not constitute parallel coextrusion. Howard et al. refers in

Examples 1 and 7 to the die according to U.S. Patent No. 3,947,537. The Examiner noted that in Fig. 2 of US '537, the gas jets 11 and 12 are placed at an angle to the die openings 6:



The above Figure 2 clearly shows that the air is introduced at an angle, significantly different from parallel flow, and that parallel coextrusion of a stream from gas jet 11 and 12 next to the nascent fiber from openings 6 is not achieved.

Moreover, US '537 describes at col. 2, lines 32-35 and 50-52, that the hot gas is supplied through gas jet 11 and 12, by inlets 22 in upper air plate 20 and lower inlet 23 in lower gas plate 21, to attenuate the polypropylene forced out die openings 6 in the die head 3. In essence, Howard et al. and US '537 focus on attenuating the extrudate at the die opening.

The Office Action also refers to the description at col. 6, lines 45-50 of Howard et al. (page 9, lines 1-3 from the bottom). Applicants wish to point out that this passage deals with the extraction step which, as detailed above, only takes place after formation of the fibers, and is thus different from formation of porous *fibers* in a singular extrusion step.

In summary, Howard et al. does not teach or suggest providing porosity to a *nascent* fiber; rather, it teaches first forming a fiber, and then inducing porosity (by removing or “extracting” a component present in the fiber already formed). The measures taken in Howard et al. to provide attenuation also do not accidentally lead to the formation of porous fibers either, as discussed above. It requires parallel flow to establish porosity in a controlled manner.

Otherwise, entering a coagulation bath would still lead to the formation of substantially closed fibers.

The Office Action further asserts that in Howard et al., a hot gas stream directed at an angle against the extrudate results in a first phase separation of the exterior of the nascent fiber (page 9, lines 16-18 of the Office Action).

As discussed above, in Howard et al., the angle is "designed to attenuate the filaments or fibers being extruded" (col. 5, lines 47 - 49). The gas stream is directed at an angle upon the extrudate to stretch it and to attenuate the fiber thickness as to form the extrudate into filaments of controlled diameter. The gas stream in Howard et al. does not comprise any means to control porosity, and Howard et al. merely advocates the use of hot air (col. 2, lines 35 - 36) to control fiber thickness. Further, Applicants submit that it requires parallel flow to establish porosity in a controlled manner.

Moreover, based on the disclosure of Howard et al., one of ordinary skill in the art would understand that an angle is required to achieve the purpose intended by Howard et al., i.e., attenuating the filaments or fibers being extruded. Therefore, one of ordinary skill in the art would have no apparent reason to modify Howard et al. by changing the setup to a parallel gas or liquid stream flow, which is contrary to the teachings of Howard et al. and would render Howard et al. unsatisfactory for its intended purpose. See MPEP 2143.01.V.

The Office Action further asserts that "0° is indeed an angle" (page 5, line 1 of the Office Action). Applicants respectfully disagree.

The term "angle," as used in Howard et al. should be given its ordinary meaning. It is generally known that "an angle" represents "a figure formed by two lines extending from the same point," or "the amount of turning necessary to bring one line or plane into coincidence with or parallel to another." See, e.g., Merriam-Webster online dictionary. When two lines are

parallel to each other, there is no turning necessary and thus no angle. It is clear that 0° is not within the ordinary meaning of "an angle."

Koops et al. is cited as disclosing a method for the production of hollow fiber membranes with the aid of a one-step process using a spinning head which has three concentrically arranged outlet openings (page 10, first paragraph of the Office Action).

As set forth above, one of ordinary skill in the art would have no apparent reason to modify Howard et al. by changing the setup to a parallel gas or liquid stream flow, which is contrary to the teachings of Howard et al. and would render Howard et al. unsatisfactory for its intended purpose. Therefore, one of ordinary skill in the art would have no apparent reason to modify Howard et al. by substituting the spinning head described in Koops et al. for that in Howard et al.'s apparatus.

In view of the foregoing, Applicants respectfully submit that present claim 1 as well as dependent claims 2-5, 7, 10-16, 18 and 26-36 is patentable over Howard et al. in view of Koops et al., and thus the rejection should be withdrawn.

**b.** Claims 17 and 22 were rejected under 35 U.S.C. § 103(a) as being obvious over Howard et al. in view of the "EPA Technical Bulletin on Zeolite," the EPA Technical Bulletin. Applicants respectfully traverse the rejection.

Howard et al. is discussed above in Section III.a. The EPA Technical Bulletin is cited against claims 17 and 22 merely as teaching that "zeolite is synthesized ... to predict the properties of the zeolite and to make hydrophobic zeolite" (page 10, lines 5-7 of the Office Action). As the EPA Technical Bulletin does not rectify the above noted deficiencies of Howard et al., the combination of Howard et al. and the EPA Technical Bulletin still would not result in the subject matter of claim 1, from which claims 17 and 22 depend indirectly and

directly. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

c. Claims 20 was rejected under 35 U.S.C. § 103(a) as being obvious over Howard et al in view of U.S. Patent No. 5,786,428 to Arnold et al. Applicants respectfully traverse the rejection.

Howard et al. is discussed above in Section III.a. Arnold et al. is cited merely as disclosing separation systems which use adsorbent as the basis for conducting enantioresolution of optically active amino acids and peptides and methods for using the adsorbent (page 15, lines 1-3 of the Office Action). As Arnold et al. does not rectify the above noted deficiencies of Howard et al., the combination of Howard et al. and Arnold et al. still would not result in the subject matter of claim 1, from which claim 20 depends. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

d. Claim 21 was rejected under 35 U.S.C. § 103(a) as being obvious over Howard et al. in view of U.S. Patent No. 3,493,497 to Pretorius et al. Applicants respectfully traverse the rejection.

Howard et al. is discussed above in Section III.a. Pretorius et al. is cited merely as disclosing a chromatographic separation process which can be adapted to produce very rapid separations in a given system (page 17, lines 3-4 of the Office Action). As Pretorius et al. does not rectify the above noted deficiencies of Howard et al., the combination of Howard et al. and Pretorius et al. still would not result in the subject matter of claim 1, from which claim 21 depends. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

e. Claim 24 was rejected under 35 U.S.C. § 103(a) as being obvious over Howard et al. in view of U.S. Patent No. 6,454,943 to Koenhen. Applicants respectfully traverse the rejection.

Howard et al. is discussed above in Section III.a. Koenhen is cited merely as disclosing a self-supporting capillary membrane obtained by extruding the hollow fiber using an extruder and guiding the reinforcing fibers through a spinneret of the extruder (page 18, lines 12-19 of the Office Action). As Koenhen does not rectify the above noted deficiencies of Howard et al., the combination of Howard et al. and Koenhen still would not result in the subject matter of claim 1, from which claim 24 depends. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

f. Claims 19 and 23 were rejected under 35 U.S.C. § 103(a) as being obvious over Howard et al. in view of U.S. Patent No. 3,344,177 to Hensley et al. Applicants respectfully traverse the rejection.

Howard et al. is discussed above in Section III.a. Hensley et al. is cited merely as disclosing a purification method to obtain a substantially pure water insoluble aromatic dicarboxylic acid product from lower purity crude products (page 20, lines 14-16 of the Office Action). As Hensley et al. does not rectify the above noted deficiencies of Howard et al., the combination of Howard et al. and Hensley et al. still would not result in the subject matter of claim 1, from which claims 19 and 23 depend. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

g. Claim 23 was rejected under 35 U.S.C. § 103(a) as being obvious over Howard et al., in view of WO 00/02638 to Boggs et al. Applicants respectfully traverse the rejection.

Howard et al. is discussed above in Section III.a. Boggs et al. is cited merely as disclosing membranes for removing organic compounds that have been added to a biological



fluid which include a polymeric matrix and a particulate material immobilized within the matrix (page 22, lines 1-3 of the Office Action). As Boggs et al. does not rectify the above noted deficiencies of Howard et al., the combination of Howard et al. and Boggs et al. still would not result in the subject matter of claim 1, from which claim 23 depends. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

**IV. Allowable Subject Matter**

Claim 9 was indicated to be allowable if rewritten to overcome the 112 rejection and to include all of the limitations of the base claim.

Applicants respectfully submit that the rejections of claim 1, from which claim 9 depends, have been overcome as set forth above. Accordingly, the Examiner is respectfully requested to reconsider and allow claim 9.

**V. New Claim**

Newly added claim 37 corresponds to previous claim 9. As noted above, claim 9 was indicated to be allowable. Therefore, Applicants respectfully submit that claim 37 is also allowable.

**VI. Conclusion**

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his earliest convenience.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: September 24, 2010

By:



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